



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

SWA3-3

Job Sheet 173285



Part No: SWA3-3

Job Qty: 1 ea

Part Name: Electric Swivel 3,000 lb Safe Work Load (1,360 Kg)



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 2/27/18

Job Tracking No:

Due Date: 3/16/18

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DWG SWA3-3 Rev 3 IPP Rev A 18.02.13 New issue DP Verify DD

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea		3/15/18	0.00	0.00	Start Up Small Fab-2		SB
110	Small Fab	1 pcs		3/16/18	0.00	2.00	Small Fab-6		AP
120	QC	1 pcs		3/16/18	0.00	0.00	QC5		18.9.18.3.9
130	Packaging	1 pcs		3/16/18	0.00	0.00	Packaging3		2/11
140	QC21-FG	1 Ea		3/16/18	0.00	0.00	QC21		18/03/09

Part Op 110 - Assemble as per DWG. Sheet 1 ***All assembly to be done in accordance with SWA3 swivel manual*** Engrave Descriptions: T/N And / or S/N number as required Using Marktronic engraver as per DWG. Last name and logo as per DWG.

130 - Bag and tag

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
188-FPSS-832-1/4	Set Screw	1 Ea (1 ea)	90-Start up Operation	5027241
330	Rotary Connector	1 (1 ea)	110-Small Fab	
92210A303	Flat Socket Cap Screw	4 pcs (4 ea)	110-Small Fab	5031242
EL-PLUG-F	3-Prong Female Spade Plug	1 Ea (1 ea)	110-Small Fab	5029230
EL-PLUG-M	3-Prong Male Spade Plug	1 Ea (1 ea)	110-Small Fab	5029372
EL314-SJTOW	3 Wire	6 ft (6 ea)	110-Small Fab	5047767
SWA3-100	Upper End - Swa3 Swivel	1 Ea (1 ea)	110-Small Fab	5029397
SWA3-200	Lower End	1 Ea (1 ea)	110-Small Fab	5029398
SWA3-300	Wire Clamp	2 Ea (2 ea)	110-Small Fab	5029399
SWA3-400	Button Head Screw	2 Ea (2 ea)	110-Small Fab	5049473
SWA3-500B	Contact Spacer	1 Ea (1 ea)	110-Small Fab	5029402
SWA3-600	O-Ring	1 Ea (1 ea)	110-Small Fab	5029403
SWA3-700	Ball Bearing	32 Ea (32 ea)	110-Small Fab	5027239
SWA6A-1900	Female Spade Terminal - 1/4"	6 Ea (6 ea)	110-Small Fab	5049788

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	188-FPSS-832-1/4	1	96	0
110-Small Fab	330	1	0	0
	92210A303	4	100	0
	EL-PLUG-F	1	38	0
	EL-PLUG-M	1	35	0
	EL314-SJTOW	6	247	0

SWA3-100	1	0	0
SWA3-200	1	0	0
SWA3-300	2	0	0
SWA3-400	2	0	0
SWA3-500B	1	0	0
SWA3-600	1	0	0
SWA3-700	32	300	0
SWA6A-1900	6	88	0

Part Specifications

Specifications could not be found.

Plex 2/27/18 1:46 PM Dart.lajeunesse.marie



Container No: S046972



Part: SWA3-3

Job No: 173285

Serial No/Batch: S046972

Revision: 3

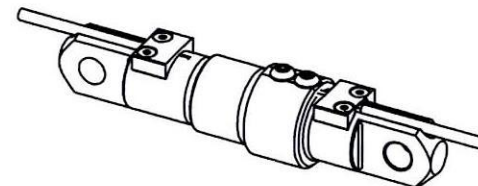
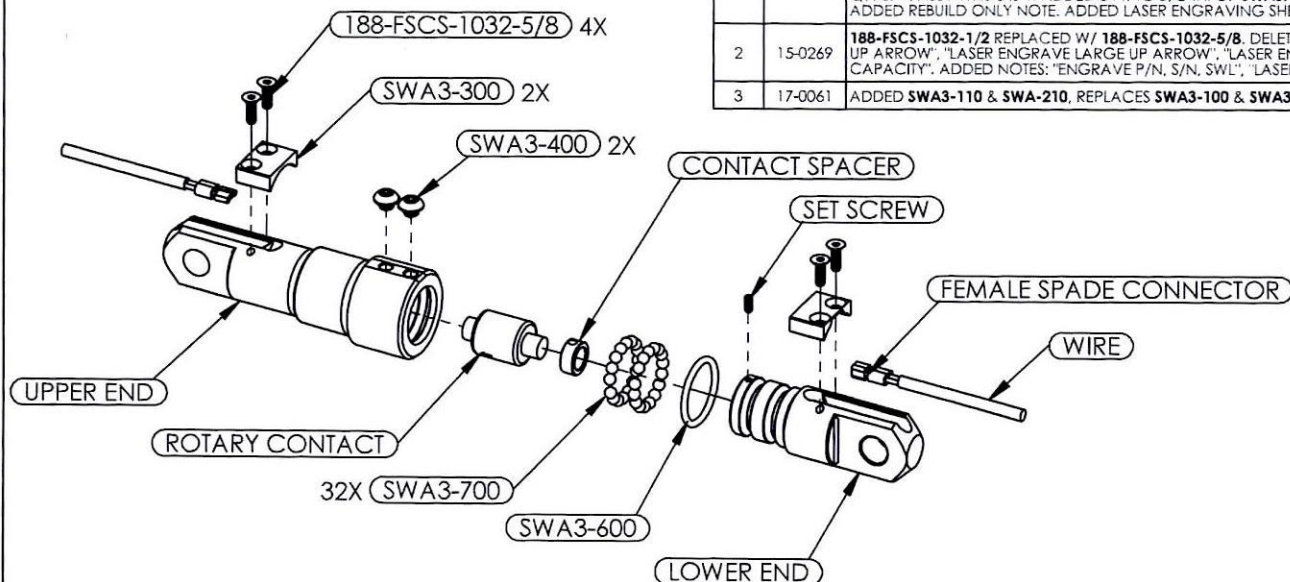
Inspector:

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL.: 1 613 632-6200
Email: sales@dartaero.com
www.dartaerospace.com

Date: 03/01/18

This drawing, specifications, and concepts contained here in are the sole property of Dart Aerospace, and may not be reproduced or used in any fashion without the prior written permission of Dart Aerospace Eugene, OR.

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
A		REPLACED ID DECAL 600.1318 WITH LASER ETCHING	11/16/2012	JAG	
B		REMOVED 2 WIRE HARNESS	8/8/2013	JAG	RW
1	15-0079	UPDATED TO NEW DRAFTING STANDARDS. ADDED SWA6A-2000, 188-FPSS-832-3/8, EL314-SJTOW CHD QTY'S: -2 ASSY WAS 6 IS 1, -3 ASSY WAS 6 IS 1, ADDED 6 FT. TO B/O INFO, EL404-ARTIC CHD QTY'S: -4 ASSY WAS 6 IS 1, ADDED 6 FT. TO B/O INFO, SWA6A-1900 CHD QTY'S: -4 ASSY WAS 8 IS 4. ADDED REBUILD ONLY NOTE. ADDED LASER ENGRAVING SHEET.	4/16/2015	DPD	JAG
2	15-0269	188-FSCS-1032-1/2 REPLACED W/ 188-FSCS-1032-5/8. DELETED NOTES: 2X "LASER ENGRAVE SMALL UP ARROW", "LASER ENGRAVE LARGE UP ARROW", "LASER ENGRAVE DART LOGO P/N S/N CAPACITY". ADDED NOTES: "ENGRAVE P/N, S/N, SWL", "LASER ENGRAVE DART LOGO".	9/23/2015	DPD	JAG
3	17-0061	ADDED SWA3-110 & SWA-210, REPLACES SWA3-100 & SWA3-200 IN -4 ASSY.	3/23/2017	DPD	JAG



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 172237 MLC
18-02-14

-2 QTY	-3 QTY	-4 QTY	B/O	Part #	Description	Material	B/O INFORMATION OR SPECIFICATIONS	PG.
1	1	-		SWA3-100	UPPER END			1
-	-	1		SWA3-110	UPPER END			1
1	1	-		SWA3-200	LOWER END			1
-	-	1		SWA3-210	LOWER END			1
2	2	2		SWA3-300	WIRE CLAMP			1
2	2	2		SWA3-400	BUTTON HEAD SCREW			1
1	-	-		SWA3-500	CONTACT SPACER			1
-	1	1		SWA3-500B	CONTACT SPACER			1
1	1	1		SWA3-600	O-RING			1
32	32	32	B/O	SWA3-700	BALL BEARING	S.S.	Ø1/4 MCMaster-CARR #9529K15	1
1	-	-	B/O	SWA6A-900A	ROTARY CONTACT		MERCOTAC #230	1
-	1	-	B/O	SWA6A-900B	ROTARY CONTACT		MERCOTAC #330	1
-	-	1	B/O	SWA6A-900C	ROTARY CONTACT		MERCOTAC #430	1
4	4	4	B/O	188-FSCS-1032-5/8	FLAT SOCKET CAP SCREW	S.S.	10-32 x 5/8 (MCMaster-CARR #92210A303)	1
1	1	-	B/O	EL314-SJTOW	3 WIRE		6 FT. (TEXCAN #EL 314-SJTOW 3/14)	1
-	-	1	B/O	EL414-ARTIC	4 WIRE		6 FT. (TRUCK & AUTO SUPPLY #EL 414-ARTIC 4/14)	1
-	1	1	B/O	188-FPSS-832-1/4	SET SCREW	18-8 S.S.	8-32 X 1/4 MCMaster-CARR #92311A190	1
1	-	-	B/O	188-FPSS-832-3/8	SET SCREW	S.S.	8/32 X 3/8 (MCMaster-CARR #92311A192)	1
4	6	4	B/O	SWA6A-1900	1/4" FEMALE SPADE CONNECTOR		(MCMaster-CARR #69525K16)	1
-	-	4	B/O	SWA6A-2000	1/8" FEMALE SPADE CONNECTOR		(MCMaster-CARR #69525K14)	1
1	1	1	B/O	600.1319	UP DECAL			N/S
1	1	1	B/O	EL-PLUG-F	FEMALE PLUG	PE High Density	(MCMaster-CARR #7216K6)	1
1	1	1	B/O	EL-PLUG-M	MALE PLUG	PE High Density	(MCMaster-CARR #7216K5)	1
-2 QTY	-3 QTY	-4 QTY						

NOTES:

- ALL ASSEMBLY TO BE DONE IN ACCORDANCE WITH SWA3 SWIVEL MANUAL.
- FOR CUSTOMER REBUILD ONLY.

		TITLE	
		SWA3 SWIVEL	
DWG NO.		SWA3	
REV		3	
MATERIAL		UNLESS OTHERWISE SPECIFIED	
HEAT TREAT		DIMENSIONS ARE IN INCHES	
FINISH		.XXX ± .005 FRACTIONS ± 1/8	
SPEC		.XX ± .01 ANGLES ± 5°	
		.X ± .1 SURFACES = 125/✓	
DRAWN BY: CANAM		1. BREAK ALL SHARP EDGES .015 x 45° OR .015R	
CHECKED: SM 03/23/2017		2. DIMENSIONAL LIMITS APPLY AFTER PLATING	
OPPS APPR: AA 03/28/2017		3. INTERPRET DIM AND TOL PER ASME Y14.5M-2009	
QA APPR: JL 04/05/2017		USED ON MODEL	
APPROVED: JAG 04/11/2017			
SCALE	1:4	DATE	
			SHEET 1 OF 2

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

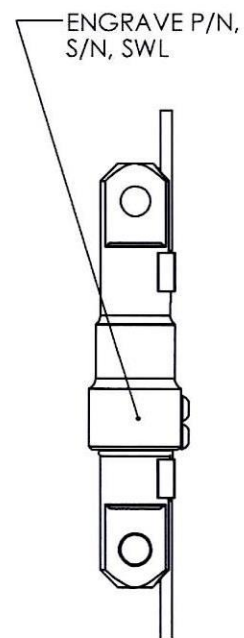
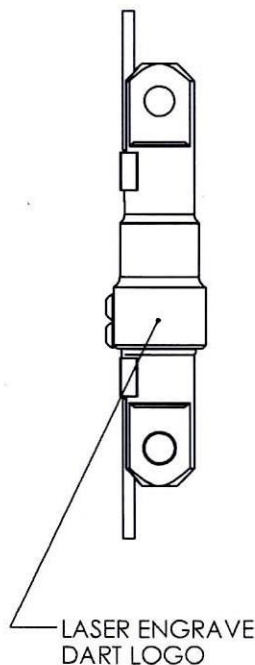
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																																
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐																																																																	
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																																																																	
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐																																																																	
Large Fab ☐	Composite ☐	Supplier ☐																																																																		
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval																																																																
Description Work Order Deviation		Disposition		Completed By																																																																
• USED SHRINK TUBES AND SILICONE TO INSULATE ROTARY CONTACT TERMINALS • INSTALLED "DART" STICKER NO: D2728-1 INSTEAD OF LASER ENGRAVING				Lead hand / Supervisor Approval Verification																																																																
				QC / QA Coordinator Approval																																																																
Root Cause <table style="width:100%; border: none;"> <tr><td style="border: none;">Environment ☐</td><td style="border: none;">No Re-verification ☐</td></tr> <tr><td style="border: none;">Design ☐</td><td style="border: none;">Operator ☐</td></tr> <tr><td style="border: none;">Doc/Data ☐</td><td style="border: none;">Offset/Setup ☐</td></tr> <tr><td style="border: none;">Equip/Tooling ☐</td><td style="border: none;">Supplier ☐</td></tr> <tr><td style="border: none;">Handling/Pre ☐</td><td style="border: none;">Training ☐</td></tr> <tr><td style="border: none;">Material ☐</td><td style="border: none;">Use for Testing ☐</td></tr> <tr><td style="border: none;">Internal Transport ☐</td><td style="border: none;">Poor Information ☐</td></tr> <tr><td style="border: none;">Tribal Knowledge ☐</td><td style="border: none;">Rushing ☐</td></tr> <tr><td style="border: none;">LOA ☐</td><td style="border: none;">Product Improvement ☐</td></tr> <tr><td style="border: none;">Substation ☐</td><td style="border: none;">Process Improvement ☐</td></tr> <tr><td style="border: none;">Past Expiry Date ☐</td><td style="border: none;">Manufacturing Process ☐</td></tr> <tr><td style="border: none;">Misidentified ☐</td><td style="border: none;">Past Due ☐</td></tr> </table>		Environment ☐	No Re-verification ☐	Design ☐	Operator ☐	Doc/Data ☐	Offset/Setup ☐	Equip/Tooling ☐	Supplier ☐	Handling/Pre ☐	Training ☐	Material ☐	Use for Testing ☐	Internal Transport ☐	Poor Information ☐	Tribal Knowledge ☐	Rushing ☐	LOA ☐	Product Improvement ☐	Substation ☐	Process Improvement ☐	Past Expiry Date ☐	Manufacturing Process ☐	Misidentified ☐	Past Due ☐	FAULT CATEGORY <table style="width:100%; border: none;"> <tr> <td style="border: none;">Pressure/Forced ☐</td> <td style="border: none;">Temperature/Cure ☐</td> <td style="border: none;">Power Loss/Surge ☐</td> <td style="border: none;">Positioned Wrong ☐</td> </tr> <tr> <td style="border: none;">Bending ☐</td> <td style="border: none;">Set-up ☐</td> <td style="border: none;">Folio/Program ☐</td> <td style="border: none;">Outside Dimensions ☐</td> </tr> <tr> <td style="border: none;">Centre Not Concentric ☐</td> <td style="border: none;">BOM/Route ☐</td> <td style="border: none;">Grain ☐</td> <td style="border: none;">Over/Under tolerance ☐</td> </tr> <tr> <td style="border: none;">Cracks ☐</td> <td style="border: none;">Broken/Damage/Defect ☐</td> <td style="border: none;">Weld ☐</td> <td style="border: none;">Part Incorrect ☐</td> </tr> <tr> <td style="border: none;">Crimp/Kink/Ripple/Wave ☐</td> <td style="border: none;">Inspection Incomplete/Unqualified ☐</td> <td style="border: none;">Wrong Stock Pulled ☐</td> <td style="border: none;">Part Lost/Missing ☐</td> </tr> <tr> <td style="border: none;">Cuffs ☐</td> <td style="border: none;">Contamination ☐</td> <td style="border: none;">Out of Sequence ☐</td> <td style="border: none;">Part Moved ☐</td> </tr> <tr> <td style="border: none;">Crushing ☐</td> <td style="border: none;">Countersink ☐</td> <td style="border: none;">Off-set ☐</td> <td style="border: none;">Drawing ☐</td> </tr> <tr> <td style="border: none;">Heat Treat ☐</td> <td style="border: none;">Cut Too Short ☐</td> <td style="border: none;">Mislabeled ☐</td> <td style="border: none;">Finish ☐</td> </tr> <tr> <td style="border: none;">Wave/Twist in Tube ☐</td> <td style="border: none;">Instructions Incomplete/Unclear ☐</td> <td style="border: none;">Fit/Function ☐</td> <td style="border: none;">Misread ☐</td> </tr> <tr> <td style="border: none;">Marks/Chatter ☐</td> <td style="border: none;">Drill Holes ☐</td> <td style="border: none;">Misaligned/off center ☐</td> <td style="border: none;">Turning Sequence ☐</td> </tr> </table>			Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
Environment ☐	No Re-verification ☐																																																																			
Design ☐	Operator ☐																																																																			
Doc/Data ☐	Offset/Setup ☐																																																																			
Equip/Tooling ☐	Supplier ☐																																																																			
Handling/Pre ☐	Training ☐																																																																			
Material ☐	Use for Testing ☐																																																																			
Internal Transport ☐	Poor Information ☐																																																																			
Tribal Knowledge ☐	Rushing ☐																																																																			
LOA ☐	Product Improvement ☐																																																																			
Substation ☐	Process Improvement ☐																																																																			
Past Expiry Date ☐	Manufacturing Process ☐																																																																			
Misidentified ☐	Past Due ☐																																																																			
Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐																																																																	
Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐																																																																	
Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐																																																																	
Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐																																																																	
Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐																																																																	
Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐																																																																	
Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐																																																																	
Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐																																																																	
Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐																																																																	
Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐																																																																	
OTHER : _____																																																																				

This drawing, specifications, and concepts contained here in are the sole property of Dart Aerospace, and may not be reproduced or used in any fashion without the prior written permission of Dart Aerospace Eugene, OR.

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1	15-0079	ADDED LASER ENGRAVING SHEET.	4/16/2015	DPD	JAG
2	15-0269	DELETED NOTES: 2X "LASER ENGRAVE SMALL UP ARROW"; "LASER ENGRAVE LARGE UP ARROW"; "LASER ENGRAVE DART LOGO P/N S/N CAPACITY"; ADDED NOTES: "ENGRAVE P/N, S/N, SWL"; "LASER ENGRAVE DART LOGO";	9/23/2015	DPD	JAG



DART AEROSPACE	
TITLE SWA3 SWIVEL	
DWG NO. SWA3	
REV 3	
MAT'L	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES .XXX ± .005 FRACTIONS ± 1/8 .XX ± .01 ANGLES ± 5° .X ± .1 SURFACES = 125° ✓
REAT	
FINISH	
SPEC	
DRAWN BY: CANAM	1. BREAK ALL SHARP EDGES .015 x 45° OR .015R
CHECKED: SM 03/23/2017	2. DIMENSIONAL LIMITS APPLY AFTER PLATING
OPPS APPR: AA 03/28/2017	3. INTERPRET DIM AND TOL PER ASME Y14.5M-2009
QA APPR: JL 04/05/2017	USED ON MODEL
APPROVED: JAG 04/11/2017	
SCALE 1:4	DATE
SHEET 2 OF 2	

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION		AGAINST DEPARTMENT/PROCESS							
	Rework	☐	Skid-tube	☐	Cross tube	☐	Water Jet	☐	Engineering	☐
	Scrap	☐	Machining	☐	Small Fab	☐	Prod. Eng. Coord.	☐	Quality	☐
	Use-as-is	☐	Thermoforming	☐	Finishing	☐	Rec/Store/Packaging	☐	Other	☐
	Suspected Unapproved	☐	Large Fab	☐	Composite	☐	Supplier	☐		

Date :	Step #:	QTY Effective :	MRB (QSI042) Approval
--------	---------	-----------------	-----------------------

Description Work Order Deviation	Disposition	Completed By
		Lead hand / Supervisor Approval Verification
		QC / QA Coordinator Approval

Root Cause			FAULT CATEGORY							
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong
Design	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved
Internal Transport	☐	Poor Information	☐	Crushing	☐	Countersink	☐	Off-set	☐	Drawing
Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence
Past Expiry Date	☐	Manufacturing Process								
Misidentified	☐	Past Due	OTHER :							



Electric Swivel
SWA3

Work Order 173285

Customer _____

Number of Wires 3

Date 2018/03/09

Serial Number S046972

Number of Cycles	Load (Lbs.)	Action	Pass/Fail
1	3,000	Check for Conductivity against all wires.	- Pass
1	3,000	Check all wires for grounding against swivel body.	- Pass
1	1,500	Check for Conductivity against all wires.	- Pass
1	1,500	Check all wires for grounding against swivel body.	- Pass
1	750	Check for Conductivity against all wires.	- Pass
1	750	Check all wires for grounding against swivel body.	- Pass
1	0	Check for Conductivity against all wires.	- Pass
1	0	Check all wires for grounding against swivel body.	- Pass

Test Conducted By: ALAIN PATRY
Technician

Signature: 
Director of Quality Assurance

Submit